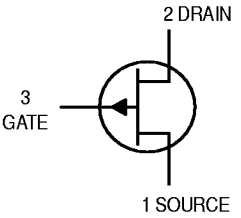
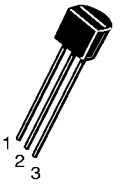
JFET Amplifiers

P–Channel — Depletion

2N5460 thru 2N5462





CASE 29–04, STYLE 7
TO–92 (TO–226AA)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain–Gate Voltage	V_{DG}	40	Vdc
Reverse Gate–Source Voltage	V_{GSR}	40	Vdc
Forward Gate Current	$I_{G(f)}$	10	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	350 2.8	mW mW/°C
Junction Temperature Range	T_J	−65 to +135	°C
Storage Channel Temperature Range	T_{stg}	−65 to +150	°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Gate–Source Breakdown Voltage (I_G = 10 μAdc, V_{DS} = 0)	2N5460, 2N5461, 2N5462	$V_{(BR)GSS}$	40	—	—	Vdc
Gate Reverse Current		I_{GSS}				
(V_{GS} = 20 Vdc, V_{DS} = 0)	2N5460, 2N5461, 2N5462		—	—	5.0	nAdc
(V_{GS} = 30 Vdc, V_{DS} = 0)						
(V_{GS} = 20 Vdc, V_{DS} = 0, T_A = 100°C)	2N5460, 2N5461, 2N5462		—	—	1.0	μAdc
(V_{GS} = 30 Vdc, V_{DS} = 0, T_A = 100°C)						
Gate–Source Cutoff Voltage	2N5460	$V_{GS(off)}$	0.75	—	6.0	Vdc
(V_{DS} = 15 Vdc, I_D = 1.0 μAdc)	2N5461		1.0	—	7.5	
	2N5462		1.8	—	9.0	
Gate–Source Voltage		V_{GS}				Vdc
(V_{DS} = 15 Vdc, I_D = 0.1 mAdc)	2N5460		0.5	—	4.0	
(V_{DS} = 15 Vdc, I_D = 0.2 mAdc)	2N5461		0.8	—	4.5	
(V_{DS} = 15 Vdc, I_D = 0.4 mAdc)	2N5462		1.5	—	6.0	
ON CHARACTERISTICS						
Zero–Gate–Voltage Drain Current	2N5460	I_{DSS}	−1.0	—	−5.0	mAdc
(V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 kHz)	2N5461		−2.0	—	−9.0	
	2N5462		−4.0	—	−16	
SMALL–SIGNAL CHARACTERISTICS						
Forward Transfer Admittance	2N5460	$\lvert y_{fs} \rvert$	1000	—	4000	μmhos
(V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 kHz)	2N5461		1500	—	5000	
	2N5462		2000	—	6000	
Output Admittance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 kHz)		$\lvert y_{os} \rvert$	—	—	75	μmhos
Input Capacitance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{iss}	—	5.0	7.0	pF
Reverse Transfer Capacitance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{rss}	—	1.0	2.0	pF
FUNCTIONAL CHARACTERISTICS						
Noise Figure (V_{DS} = 15 Vdc, V_{GS} = 0, R_G = 1.0 Megohm, f = 100 Hz, BW = 1.0 Hz)		NF	—	1.0	2.5	dB
Equivalent Short–Circuit Input Noise Voltage (V_{DS} = 15 Vdc, V_{GS} = 0, f = 100 Hz, BW = 1.0 Hz)		e_n	—	60	115	$nV/\sqrt{Hz}$

MOTOROLA

DRAIN CURRENT versus GATE SOURCE VOLTAGE

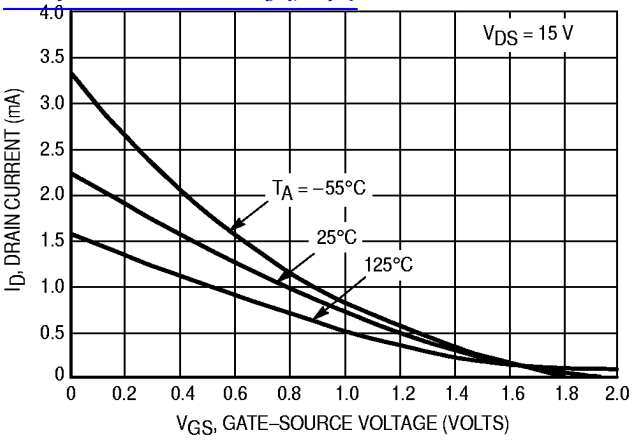


Figure 1. $V_{GS(off)}$ = 2.0 Volts

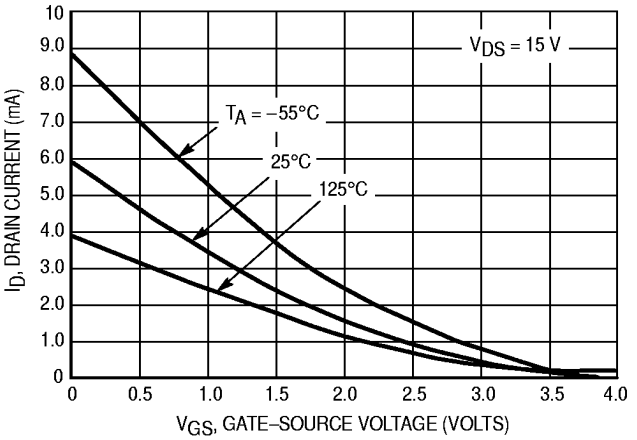


Figure 2. $V_{GS(off)}$ = 4.0 Volts

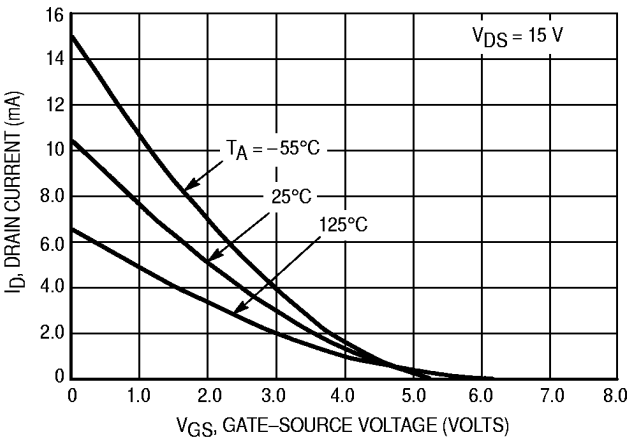


Figure 3. $V_{GS(off)}$ = 5.0 Volts

FORWARD TRANSFER ADMITTANCE versus DRAIN CURRENT

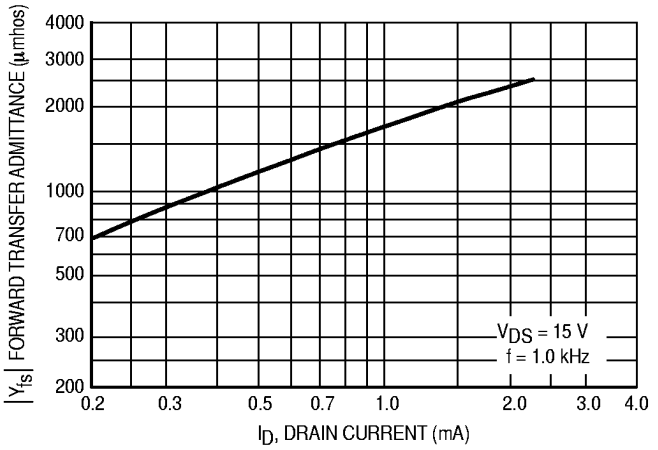


Figure 4. $V_{GS(off)}$ = 2.0 Volts

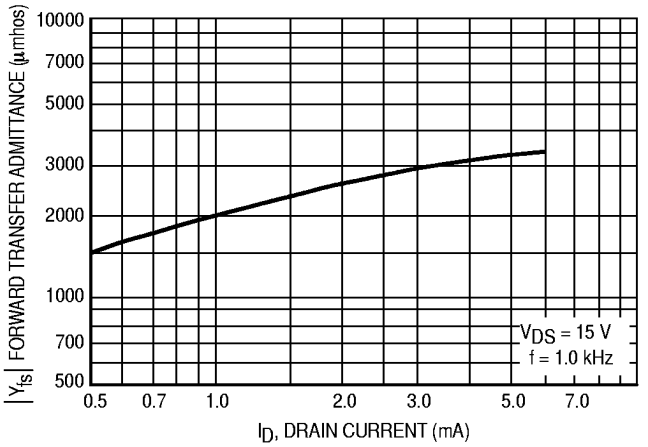


Figure 5. $V_{GS(off)}$ = 4.0 Volts

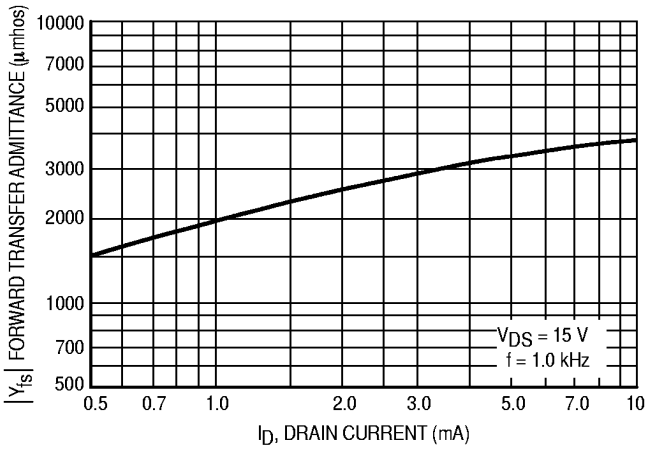


Figure 6. $V_{GS(off)}$ = 5.0 Volts

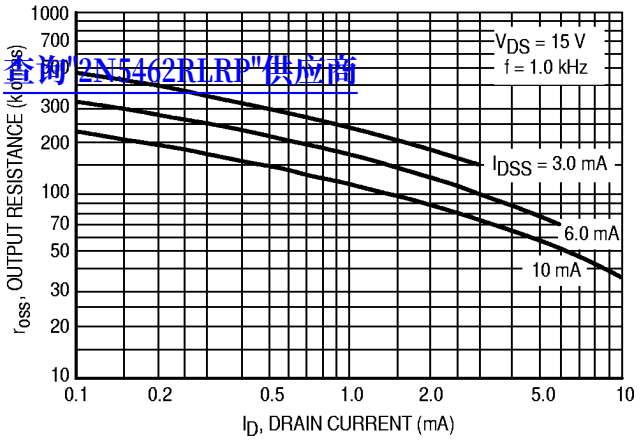


Figure 7. Output Resistance versus Drain Current

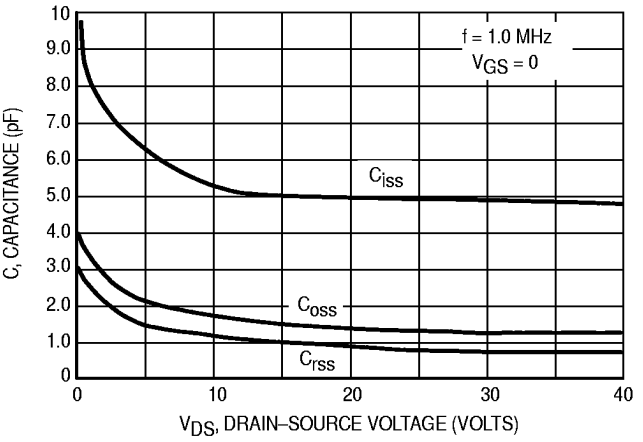


Figure 8. Capacitance versus Drain–Source Voltage

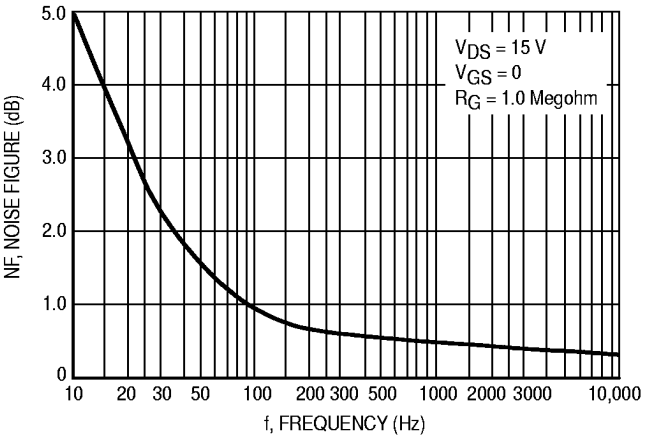


Figure 9. Noise Figure versus Frequency

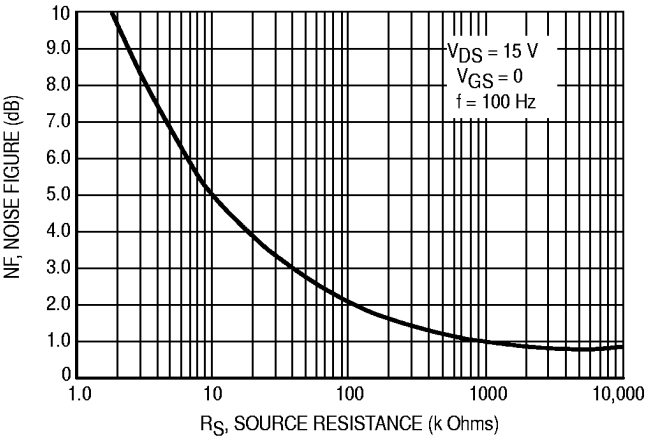
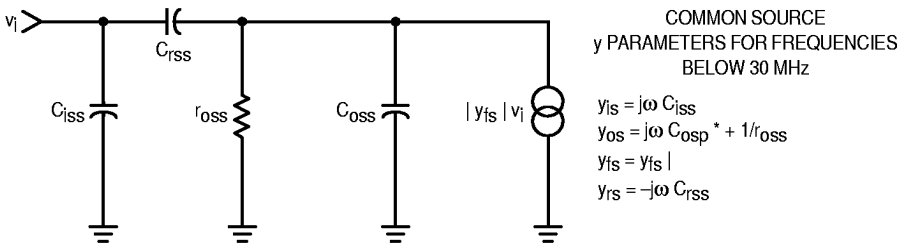


Figure 10. Noise Figure versus Source Resistance

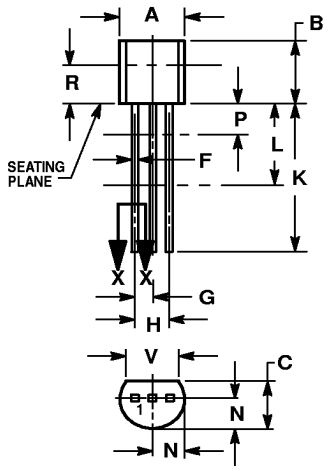


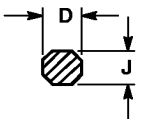
* C_{osp} is C_{oss} in parallel with Series Combination of C_{iss} and C_{rss}.

NOTE:
1. Graphical data is presented for dc conditions. Tabular data is given for pulsed conditions (Pulse Width = 630 ms, Duty Cycle = 10%).

Figure 11. Equivalent Low Frequency Circuit

PACKAGE DIMENSIONS





SECTION X–X

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.022	0.41	0.55
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	—	12.70	—
L	0.250	—	6.35	—
N	0.080	0.105	2.04	2.66
P	—	0.100	—	2.54
R	0.115	—	2.93	—
V	0.135	—	3.43	—

CASE 029–04
(TO–226AA)
ISSUE AD

STYLE 7:
PIN 1. SOURCE
2. DRAIN
3. GATE

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